

# County Highway Planning

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Adequate highways are of vital concern to every citizen of Indiana. They are an integral part of modern life. They provide the most important means of bringing people together—of permitting anyone to live a full and happy life. Providing adequate highways within the limitations of funds provided, knowledge available and time required is the responsibility which the public has assigned through its various units of government to individuals.

One of the objectives of the Highway Extension and Research Project for Indiana Counties since its inception five years ago has been the development of tools and techniques which would permit those responsible for county highways to provide adequate county roads. Such provision involves wise planning, adequate design, proper construction, correct operation and continuous maintenance. Since the first of these phases to an adequate highway system is planning, HERPIC has always maintained a major interest in planning procedures which county highway authorities should employ. A series of county highway planning manuals is being developed which will assist in this planning process. They will soon be available and will cover county highway classification and highway standards, county highway identification, county highway inventory and county highway improvement priorities.

The development of these manuals, however, has resulted in the realization that the real deterrent to good county highway planning is the lack of a full appreciation on the part of many highway authorities of the need for an organized highway planning effort at the county level. Part of this feeling exists because all counties do some planning. One does not direct that a certain road be improved without some consideration of how the improvement compares with other needed improvements, and other such “common sense” analyses. But unless such an analysis has been made in an organized manner, with all the facts at hand and by persons with appropriate technical knowledge, the planning will be incomplete and the resulting improvement may not be the correct one.

Dr. Arthur H. Compton, one of the world's greatest scientists and a Nobel Prize winner, once told of an incident that happened to his

sister who lived in India for many years. During one of the several moves which his sister and her husband made while in India, it became necessary to move into an old house. This house was in bad repair and needed among other things to have several windows repaired. The lady hired a native carpenter and drew a sketch of how she wanted one of the windows to be improved. She then left for several hours and upon returning found that the carpenter had made a pretty bad mess of things. She was naturally exasperated. When the carpenter explained that he had tried to follow her instructions, she said "But why didn't you also use your common sense!" At this the man pulled himself up to his full height and stated, "But common sense, madam, is a gift of God; I have only technical knowledge."

Like the window-sill job of that Indian carpenter, good planning requires both common sense and technical knowledge. To be effective, it must be thoroughly performed continuously by capable personnel assigned to this function. Investigation of the place of the planning process in county highway functions in Indiana and other states reveals that few counties place sufficient importance on this phase of highway management to assign it to even one employee. Who in your county has been assigned the responsibility of planning the county highway system? Does this person (or persons) have the technical knowledge and the experience (the roots of common sense) to prepare a complete plan for the development of the county highways? These are questions which must be answered in a constructive manner if the first phase of highway development, the planning phase, is to be performed well in your county. And without a good highway plan as the base, the other phases of highway development—design, construction, operation and maintenance—are on a weak foundation.

But in the face of a growing demand for better roads and better road service, can counties afford to spend time and funds for the planning phase of highway development? With the highway problem becoming more complex, as it surely is, it is evident that to build and maintain a county road system properly requires the performance of certain definite actions. Furthermore, it is essential that these actions be done correctly. Poor road development in a county can result from failure to perform all the necessary actions or from doing them incorrectly. Past experience may tell you how to develop a road in an acceptable manner but it may not tell you how to develop the road in the best possible and most economical manner. It is here that proper planning can provide the assistance required.

What is county highway planning? County highway planning con-

sists of many things, but it always includes several important steps which are attained through orderly processes based on certain facts. These are:

1. A highway inventory—This is the determination of the current physical and quality characteristics of all roads, bridges and other highway elements in the county.
2. A highway use study—This is the measurement of the volume and types of traffic using each road section.
3. Development of highway standards—This is the determination of what kind of highway service the people of the county demand and are able to finance.
4. A highway needs study—This is an analysis of the differences between the highway inventory and the highway standards.
5. A fiscal plan—This is a plan for obtaining and spending the funds needed to eliminate the highway needs.
6. A priority plan—This is a determination of the relative priority of the needed improvements.
7. A program of improvement—This is the development of one-year and four-year or longer programs of highway improvement based on the fiscal plan and the priority plan.

Each of these seven steps generally serves as the basis for each step which follows it in the listing. All are necessary in order to develop properly a one- or a four-year program of improvements. Each step is not difficult to take if someone with common sense (experience) and technical knowledge is assigned the responsibility and given the required time, personnel and equipment to take them. It should be noted, however, that planning is not a one-time occurrence. It is continuous—it never ends. As next year's improvement program is developed and the four-year plan is determined, one must begin to maintain all information in a current status, take stock of unforeseen highway requirements, evaluate the results of last year's program and develop a new program for next year and a new 4-year plan.

The seven steps of county highway planning require data which must be acquired continuously. The best data, in fact, will be that which has been collected for a number of past years so that the trends which have existed can be extrapolated into the future. Some of the most important data is discussed in the following sections of this paper. All counties should and could be collecting such data now. Some of the data has been collected by other than county highway departments and only needs to be gathered together to be made useful.

The highway inventory serves as the base on which all planning must begin. A continuously current inventory of the characteristics of every county road section, every bridge and every railroad crossing must be available if planning is to be done. The inventory consists of on-site inspection and measurement of characteristics of each section of highway. Information on widths, surface type, number and type of land uses served, length of section, etc., are logged. Some of this information—widths, surface type, and lengths—has been recently obtained by the Indiana State Highway Commission for many counties and the information is available from them. This information is valuable and should be obtained by each county—and of course it should be used.

Additional information, however, will need to be obtained for maximum use in the planning process. The most important additional inventory data needed is quality information—such as condition of the surface, adequacy of the drainage, etc. Details of how to complete or perform the inventory, what information to get and what ratings to perform will be contained in one of the manuals now being prepared.

One of the techniques which will be found most helpful in the road inventory is that of dividing the entire county highway system into road sections. The primary criteria for dividing the road system into sections is that the physical condition and use characteristics of a section of road should be similar throughout. Using this criteria and a few others which will be detailed in the manual, the mileage of the county highway system should be divided into road sections for record and planning identification purposes. These sections will vary in length, usually ranging from one to ten miles, with most around three to four miles in length.

The major item of importance in a highway use study is the volume of traffic carried on each section of highway. This information should be available for every road section for several years so that growth of traffic volume on each section of road can be estimated. A traffic volume count program should be in progress now in every county. Such a program is not difficult to initiate but requires considerable time to complete.

A satisfactory volume count program would provide a count of the volume of traffic by hour for a 2-3 day period on each road section every three years. Only a minimum of inexpensive volume counting equipment is required for such a program and only a small amount of record keeping and a small amount of time of one competent person is required for such a program in a county. But such a program requires someone to develop the count program who is competent to do so and

the assignment of responsibility for such a program to highway personnel.

The development of highway standards, another of the seven steps of county highway planning, typically consists of road classification and the development of highway design standards for each class of county highway. County road classification provides a logical means of developing systems of highways to standards which will serve adequately the people who use them.

Most persons will agree that it is impossible to build and maintain all county highways as high-type pavements. Indiana counties have not had, nor can they expect to possess, sufficient funds, equipment, materials and manpower to undertake a highway program of such magnitude. Consequently, it is necessary that the various highways be designated according to their relative importance. The importance of a given highway will vary among different individuals as their dependence on that highway varies, so it is essential that any designation or classification of county highways be made in the public interest.

Before county highways can be classified into various systems, it is necessary to determine how many different systems are practical and necessary. A careful consideration of county highway finances and desired standards has led to the conclusion that three systems of county highways are most desirable in Indiana. The degree to which a highway serves traffic and the community or abutting property is used for classifying each rural road as a county primary highway, a county secondary highway, or as a local service highway.

Traffic volume and community interest are major factors in the classification of county highways. Community interest may be indicated by the areas or locations connected by the highway. A road may serve as a vital connecting link between a small community and a large city or a major traffic artery. Another road may carry high volumes of traffic between two state routes or connect an important or productive area with a distribution center or access highway. This information may be obtained from a study of local land-use maps, population maps, a knowledge of local conditions, and traffic volume counts.

Certain highways, because of their location in the county, may have average daily traffic volumes ranging from about 400 vehicles a day to several thousand vehicles a day. Such highways are the type to be considered for inclusion in the county primary system. This system should constitute only 10 to 15 percent of all mileage in the county.

Roads that carry traffic volumes ranging from 100 to 400 vehicles a day generally belong in the county secondary system. The service

provided by these roads, such as connecting less important communities with each other and/or with a higher class road or highway, should also be considered. This system too, should comprise 10 to 15 percent of all mileage in the county.

All remaining rural roads, which, as the designation implies, carry low daily volumes, usually less than 100 vehicles per day, and which primarily serve only as land access roads, are classed as local service roads.

The development of standards for each class of highway is dependent on the goals of highway development which people of a county desire and are willing to finance. Such a goal may be for all roads to have an all-weather and a dustless pavement. It may be that in some counties all roads of all classes should be hard surfaced. All roads surely should be developed so as to be safe at reasonable speeds. Consideration of cost will undoubtedly result in certain standards for the county primary system, slightly lower standards for the county secondary system and considerably lower standards for the low-volume local service system.

When all the data which has been discussed is available—and this will take some time, perhaps a minimum of a year—the analysis of it and the determination of the county highway needs, the fiscal plan, the priority plan and sound one-year and four-year progress can be developed. All of these planning tools will show you how the highway goals of your county can be achieved. They will show the people of your county how, what and when to expect for the road past their house. These tools will indicate to everyone that your county has a sound basis for its county highway improvement programs and that local responsibility for local road improvement is being handled effectively.

One of the visual outputs of county highway planning is a one-year county highway improvement program and a four-year county highway plan. The desirability of these plans has been recognized by several acts of recent legislatures in which the preparation of such plans has been encouraged or required. It should be noted here that a one-year improvement program and a four-year plan can be prepared without doing everything which has been mentioned in this paper. The quality of any plans, however, will be dependent on the quality of the planning effort—on how fully and conscientiously the seven steps in the planning process have been followed. Moreover the quality and economy of the future highway system will be dependent on the quality of the plans.

Are you willing to settle for less than the highest quality, especially when such quality will be the least costly? Many of you may feel that your county is planning properly for the county highways in your

county. Others may be saying that "We haven't enough money to do all of these things." But county highway planning is not expensive; county highway development is most costly when good planning is absent.

If highway planning is being done adequately in your county, county officials will have :

1. The data from a county highway inventory.
2. A county road section map.
3. Data on traffic volumes for each section of every county road.
4. The highway classification system in the county.
5. The design standards for each class of roads.
6. The current highway needs of each county highway system.
7. A financial plan for eliminating these needs.
8. A priority plan for making all needed improvements.
9. A highway program for next year and a plan for improvements for at least the next four years.

At least county highway officials should be able to show progress toward having all these products of the planning process. Full use of the planning process is an indication of good highway management. The soon-to-be-ready manuals for county highway planning are intended to be helpful in implementing and conducting this important first phase of highway development in your county.

Success in county highway development lies very largely in your hands. It means effort; it means having definite goals for your county roads, and then striving earnestly to achieve these goals; it means wise planning by competent men.

Let me close with a quotation relative to this last point.

"Thousands of engineers can design bridges, calculate strains and stresses, and draw up specifications for machines, but the great engineer is the man who can tell whether the bridge or machine should be built, where it should be built, and when."